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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,741	08/31/2001	Yuji Sakai	P 282933	8398

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EXAMINER

RODRIGUEZ, GLENDA P

ART UNIT	PAPER NUMBER
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2651

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/942,741

Applicant(s)

SAKAI, YUJI

Examiner

Glenda P. Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/26/2003.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

Claims 7, 8 and 11 objected to because of the following informalities: using the expression "such as" because it does not clearly state if the Tmin formula is being claimed or is just given as an example. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 5 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Inoue et al. (US Patent No. 5, 786, 957).

Regarding Claim 1, Inoue et al. teach a disk drive having a perpendicular magnetic recording system, said disk comprising:

A disk medium in which a magnetized area corresponding to data recorded with said perpendicular magnetic recording system is formed in a perpendicular direction with respect to a medium surface (Col. 4, Lines 25-29 and Col. 11, Lines 17-19);

And a head configured to conduct a read and write operation of the data with respect to said disk medium (Col. 4, Lines 28-46);

Wherein said disk medium has a servo area in which servo data used for the position control of the head is recorded, and servo data coded with the

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DC free code is recorded on the servo area (Col. 4, Lines 47-52. Inoue et al. teach a method in order to generate a DC in the servo area, therefore it is a method of a DC free code.).

Method Claim 10 is drawn to the method of using the corresponding apparatus claimed in claim 1. Therefore method claim 10 corresponds to apparatus claim 1 and is rejected for the same reasons of anticipation as used above.

Claim 4 has limitations similar to those treated in the above rejection(s), and is met by the reference as discussed above. Claim 4 however also recite the following limitations..."and a read channel having a predetermined cut-off frequency characteristic for extracting a read signal waveform whose level changes at a magnetization transfer position of the magnetization area from the read signal read with said head from said disk medium" (Col. 7, Line 55 to Col. 8, Line 2).

Regarding Claim 2, Inoue et al. teach all the limitations of Claim 2. Inoue et al. further teach wherein a read channel configured to conduct signal processing of a read signal read with said head from said servo area of said disk medium; wherein said read channel extracts the read signal whose level changes depending upon the magnetization transfer position of said magnetized area and has a predetermined cut-off low frequency characteristic (Col. 7, Line 55 to Col. 8, Line 2).

Regarding Claim 5, Inoue et al. teach all the limitations of Claim 4. Inoue et al. further teach wherein said servo data has a servo address including a track address for identifying a track constituted on the disk medium (Col. 3, Lines 25-31).

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (US Patent No. 5, 786, 957).

Regarding Claim 11, Inoue et al. teach a disk drive having a perpendicular magnetic recording system, said disk comprising:

A disk medium in which a magnetized area corresponding to data recorded with said perpendicular magnetic recording system is formed in a perpendicular direction with respect to a medium surface (Col. 4, Lines 25-29 and Col. 11, Lines 17-19);

And a head configured to conduct a read and write operation of the data with respect to said disk medium (Col. 4, Lines 28-46);

Wherein said read channel codes the servo data used in the positioning control of the head to coded data wherein the minimum magnetized reverse interval time  $T_{min}$  of said magnetized area satisfies the condition such as a relationship of

$$T_{min} = \frac{(-\ln N)}{(2\pi f_c)} \quad (\text{Col. 4, Lines 47-52. Inoue et al. teach a method in order to}$$

generate a DC in the servo area; therefore it is a method of a DC free

code. It is obvious to a person that the equation is mathematical representation to a method).

Apparatus claim 7 is drawn to the apparatus corresponding to the method of using same as claimed in claim 11. Therefore apparatus claim 7 corresponds to method claim 11, and is rejected for the same reasons of obviousness as used above.

Regarding Claim 8, Inoue et al. teach all the limitations of Claim 7. Inoue et al. fail to teach wherein the coded data satisfies a condition wherein the servo data suach as a relationship, wherein N is 0.5 or more. One of ordinary skill in the art would have been motivated to have had N is 0.5 or more since such ranges, absent any critically (i. e., unobvious and/or unexpected result(s)), are generally achievable through routine optimization/experimentation, and since discovering the optimum or workable ranges, where the general conditions of a claim are disclosed in the prior art, involves only routine skill in the art, *In re Aller*, 105 USPQ 233 (CCPA 1955). Moreover, in the absence of any critically (i. e., unobvious and/or unexpected result(s)), the parameters set forth would have been obvious to a person of ordinary skill in the art at the time the invention was made, *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Regarding Claim 9, Inoue et al. teach all the limitations of Claim 7. Inoue et al. further teach wherein said servo data has a servo address including a track address for identifying a track constituted on the disk medium (Col. 3, Lines 25-31).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (5, 786, 957) in view of Ishiguro (US Patent No. 5, 682, 842). Inoue et al. teach all

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the limitations of Claim 1. Inoue et al. fail to teach wherein said read channel has a differentiation circuit for extracting a read signal whose level changes at the magnetization transfer position of said magnetized area and differentiating said read signal. However, this feature is well known in the art as disclosed by Ishiguro, wherein it teaches a read signal whose level changes at the magnetization transfer position of said magnetized area and differentiating said read signal (Pat. No. 5, 682, 842; Col. 3, Line 26 to Col. 4, Line 20). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Inoue et al.'s invention in order to reduce power consumption and circuit scale.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (5, 786, 957) in view of McNeil et al. (US Patent No. 6, 404, 570). Inoue et al. teach all the limitations of Claim 4. Inoue et al. fail to teach wherein the read channel extracts a read signal waveform which changes in a step-like configuration and decoding the recorded data to the original recorded data with PRML method signal processing circuit. However, this feature is well known in the art as disclosed by McNeil et al., wherein it teaches a read signal waveform which changes in a step-like configuration and decoding the recorded data to the original recorded data with PRML method signal processing circuit (Pat. No. 6, 404, 570; Col. 13, Lines 13-29). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Inoue et al.'s invention in order to adequately process the signal.

### ***Conclusion***

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Oliver et al. (US Patent No. 4, 414, 589), Baumann et al. (US Patent No. 6, 671, 119) NN76012656, Titled "Null Servo Pattern" from IBM Technical Disclosure Bulletin, on January, 1976.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenda P. Rodriguez whose telephone number is (703) 305-8411. The examiner can normally be reached on Monday thru Thursday: 7:00-5:00; alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (703) 308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gpr  
May 10, 2004.



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